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Improving Business Incubator Performance through Benchmarking and Evaluation: Lessons Learned from Europe

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Presenters:

Jorge Costa-David, Principal Administrator, European Commission, Enterprise Directorate-General, Belgium (Jorge.Costa-David@cec.eu.int)

Jack Malan, Partner, Centre for Strategy and Evaluation Services, United Kingdom (jmalan@cses.co.uk)

Rustam Lalkaka, President, Business & Technology Development Strategies LLC, New York, USA (rlalkaka@earthlink.net)

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The European Commission has recently benchmarked incubators across Europe. This paper discusses methodologies, conclusions, lessons learned, follow-up activities and possible adaptation of benchmarking to other countries and regions.

BACKGROUND 1

1.1 Benchmarking Study

In February this year, the European Commission published the results of a study to benchmark the performance of business incubators across the European Union. This paper presents a summary of the results and examines the implications for other regions.

The study was led by Jack Malan from the Centre for Strategy & Evaluation Services (UK). Rustam Lalkaka from Business & Technology Development Strategies LLC (New York) acted as an adviser to the study team.

1.2 Overview – Development of Business Incubators in Europe

In Western Europe, there are currently thought to around 900 business incubators (using a broad definition).

Business Incubators in European Union Member States

Country	Number	Country	Number
Austria	63	Italy	45
Belgium	13	Luxembourg	2
Denmark	7	Netherlands	6
France	192	Portugal	23
Finland	26	Sweden	39
Germany	300	Spain	38
Greece	7	United Kingdom	144
Ireland	6	TOTAL	911

Source: DG Enterprise (2001) and CSES research

The first incubators were set up in Europe during the late 1970s. Following the oil price rise shocks of the early and mid 1970s, the first initiatives were taken by organisations such as British Steel in the UK and linked to measures to create alternative employment opportunities in areas adversely affected by the decline of traditional industries – coal, steel, ship-building, textiles, etc. From the mid-1980s onwards, the European Commission has provided support for the establishment of incubators in developing regions and areas suffering from industrial decline. Many other organisations – development agencies, universities, the private sector - have also sponsored incubators.

As the above table shows, there is a wide variation between European countries in the 'density' of business incubator developments: thus, whereas in Austria (with the highest 'density') there is one incubator per 3,000 companies, in Greece (with the lowest 'density') the corresponding figure is 1: 106,000 companies. Across the EU as a whole,

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the average ratio is 1:19,000. With the exception of Belgium and the Netherlands, the lowest densities of incubators are to be found in southern EU Member States.

As in the US, a significant percentage of the business incubators in Europe do not have any particular sectoral orientation and are essentially mixed-use facilities. However, most have developed significant sectoral expertise. High value-added activities such as Information & Communication Technologies, Research & Development, Biotechnology and Pharmaceuticals account for a large proportion of incubator business activities.

1.3 European Commission Policy Context

Promotion of small and medium sized enterprise (SMEs) is a key European Union priority. The Commission's 1997-2000 Integrated Programme for SMEs (and its successor) provides a framework for coordination of all activities in favour of SMEs. This covers:

- Specific Community measures for SMEs as carried out under the multiannual programme for SMEs in the European Union;
- The contribution of other Community policies (such as the Structural Funds) to SME development;
- Concerted Actions which aim to promote the exchange of best practice amongst Member States and with the Commission on SME policies.

At the 2000 Lisbon European Council, Government leaders invited the Commission and the Member States to focus their action in favour of micro and small businesses.

Shortly after the Lisbon Council, the Commission adopted the communication *Challenges for enterprise policy in the knowledge-driven economy* and a proposal for a Council Decision on a *Multiannual Programme for Enterprise and Entrepreneurship (2001-2005).* This set out the challenges to be faced by enterprise policy over the next five years. The new Multiannual Programme provides a framework of actions in support of the objectives of the Communication. Business incubators, and the need to improve benchmarking techniques, have an important role to play in the context of both the above policies, as was emphasised by the recent Lisbon Council meeting.

Benchmarking is defined here as the process of continuously measuring and comparing an incubator’s establishment and operations process against leaders in this field, in order to gain information that canl help the organization to take actions on enhancing its performance, attribute by attribute.

The study undertaken by the European Commission on business incubators is one of 11 being supported and covering the various aspects and stages of SME development.

BENCHMARKING METHODOLOGY 2

2.1 Objectives of the Benchmarking Project

The project 'Benchmarking of Business Incubators' was undertaken for the European Commission by the Centre for Strategy & Evaluation Services (CSES). The objectives of the project were, in summary, to:

- Define 'headline' benchmarks for business incubators relating to their performance with regard to management and promotion;
- Support this with 'operational' benchmarks' that define the means of achieve the 'headline' benchmarking performance;
- Provide assistance to business incubators that participate in the exercise to implement operational improvements by, amongst other things, producing guidance on achieving benchmarked performance and examples of best practice.

The research was undertaken during 2001. The work carried out by CSES involved two main phases: Phase 1 focused on preparing an analytical framework and involved a review of previous research and other literature on business incubator activities. During Phase 2 the framework was tested and further developed through a series of interviews with incubator managers, stakeholders and client companies from the EU Member States.

2.2 Methodological Approach

A detailed description of the methodology that was adopted for this project, and more specifically the business incubator benchmarking framework, is set out in the CSES report. However, it is helpful to summarise the overall approach:

- *Step 1 - Model:* A generic business incubator model was developed setting out basic functions and operating procedures. This model is based on the literature review, inputs by the Managers Group and CSES's fieldwork.
- *Step 2 – Best Practice Issues:* The model defines a number of 'key best practice issues' that provide the framework required to define benchmarking indicators. These are subdivided into 'headline' and 'operational' indicators;
- *Step 3 – Performance Drivers:* In addition, the model highlights the 'key performance drivers' that will influence the extent to which incubators achieve best practice benchmarks. These drivers fall under three headings -
- *Step 4 – Business Incubator Data:* Two surveys were carried out by CSES: the first focused on incubators themselves while the second involved obtaining

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feedback from client companies. The survey data was used to determine where incubators stand in relation to the various benchmark indicators;

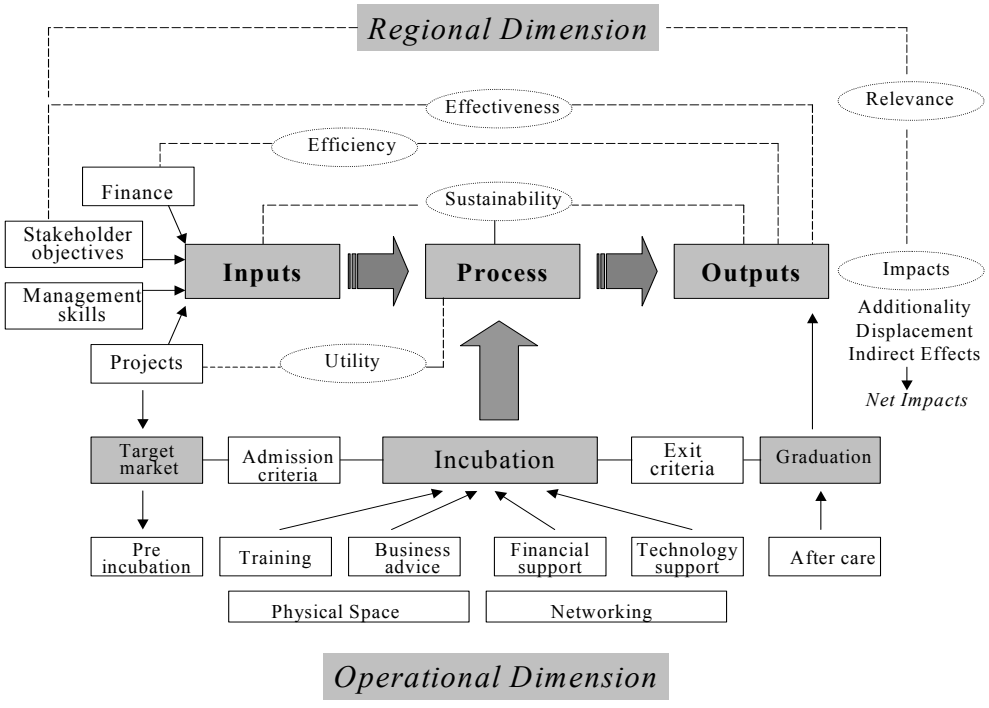
- *Step 5 – Best Practice Guidance:* Based on the earlier steps and analysis, the final section of this report then suggests key actions that should be taken in setting up and operating business incubators.

2.3 Model

The way in which business incubators operate can be depicted in terms of a simple input-output model:

- *Inputs* – these mainly consist of the inputs made by stakeholders (e.g. providing finance), management resources, and projects put forward by entrepreneurs;
- *Processes* – the various inputs are brought together in the business incubation process through the provision of incubator space and other services to companies;
- *Outputs* – successful companies graduate with positive job and wealth creation impacts on local economies.

The diagram below sets out the model is schematic format, combining the incubator input-output dimension (shown in the bottom half of the diagram) together with key best practice issues (shown in the top half of the diagram).



BENCHMARKING METHODOLOGY 2

Taking the operational dimension, projects are identified that meet the criteria used to define the incubator's broad target market (e.g. projects with a particular technology focus). Some entrepreneurs may be encouraged to go through a 'pre-incubation' process, typically involving a combination of training and business planning, before they gain admission to the incubator.

The incubation process itself typically brings together three categories of business support services – training, advice on business issues, financial support (either from an incubator's own sources or from external providers, i.e. financial institutions), and technology support. The provision of incubator units and networking (internally between tenants and externally with other organisations, e.g. universities, large companies) constitute the other basic features of the 'package'.

A key feature of incubators is the limited duration of assistance with exit criteria typically specifying that firms should 'graduate' after a fixed period of time (e.g. five years). Some firms will of course leave sooner if they grow rapidly and require more space than the incubator can provide. However, in many cases, contact will be retained with 'graduate' companies through the provision of after-care services and/or on-going networking.

2.4 Key Best Practice Issues

In the earlier diagram, the best practice issues are defined as follows:

- *Efficiency* – the relationship between financial inputs and outcomes and, linked to this, value for money;
- *Effectiveness* – the extent to which the outcomes demonstrate that specific objectives are being achieved;
- *Relevance* – the extent to which objectives promote broader policy outcomes;
- *Utility* – the extent to which services provided to clients meets their needs;
- *Sustainability* – the sustainability of operations and durability of outcomes

There are a number of factors that will influence the extent to which incubators are able to achieve best practice. These factors relate to the setting up and operating incubators; key incubator functions, management, and promotion; and performance management, i.e. evaluation of incubator services and impacts, See Appendix A.

The project was based on three main data sources – a survey of European incubators; a company survey focusing on the clients of business incubators; and an interview programme with incubator managers and their partner organisations (regional authorities, universities, companies, etc).

SUMMARY OF KEY FINDINGS 3

The study undertaken for the European Commission arrived at a number of key conclusions and recommendations. These are summarised below.

3.1 Setting Up and Operating Incubators

3.1.1. Business incubators should be designed to support and be part of a broader strategic framework – either territorially orientated or focused on particular policy priorities (e.g. development of clusters), or a combination of these factors. A key lesson from this project is that incubators should not be stand-alone entities but rather work along side other organisations and schemes to promote broader strategies. Examples of where this approach is being adopted are given in the report.

3.1.2. It follows that incubators should be promoted by an inclusive partnership of public and private sector stakeholders. Business incubator partnership structures will reflect overall regional, technology and business support strategies. The research suggests that incubators are typically promoted by a wide range of organisations from the public and private sectors including local authorities, universities, companies, and financial institutions. Public authorities have an important catalytic and leadership function, and can provide crucial pump-priming investment during the development phase of incubators.

3.1.3. During the development phase, it is important for the market to be tested and a business plan to be devised that can provide a framework for incubator operations. The incubator business plan should set out the rationale for the project and how it addresses market failure (if this is the rationale), the target market, expected levels of demand, a detailed operating framework (infrastructure and services), estimated capital investment and running costs/sources of funds, how the incubator will be managed, and other factors.

3.1.4. There are a number of different set up funding models but the evidence from this project is that public support for the establishment of incubators in Europe will remain critical for the foreseeable future. The analysis contained in this report suggests that public funding accounts for a high proportion of the set up costs of most incubators (which average around €4 million) and for around 37% of operating revenue.

3.1.5. Likewise, there are different ways in which incubators cover their operating costs and whilst many incubators rely on public subsidies, there is a strong argument in favour of dependence on this source of revenue funding being minimised. According to the research, incubator operating costs average around €500,00 per annum, the highest proportion of cost relating to staff (41%) followed by client services (24%), maintenance of buildings and equipment (22%), and other costs such as utilities (13%). Whilst many incubators are able to recoup a significant proportion of these costs (averaging around

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40%) from tenants, the element of public subsidy remains high in most cases. At present, some three-quarters (77%) of European incubators operate on a not-for-profit basis.

3.2 Business Incubator Functions

3.2.1. The provision of physical space is central to the incubator model. Standard good practices now exist with regard to the most appropriate configuration of incubator space. The research suggests that European incubators typically have around 5,800 square meters of space for tenants, sufficient to accommodate some 18 firms at any one time in a variety of units. Smaller incubator space than this is likely to make it more difficult to generate economies of scale. Another key lesson from the research is the need to operate at no more than around 85% occupancy levels.

3.2.2. The value added of incubator operations lies increasingly in the type and quality of business support services provided to clients and developing this aspect of European incubator operations should be a key priority in the future. There is a widespread acceptance that although central to the incubator model, there is now a more or less standard model for the optimal configuration of physical space and that it is the quality and range of business support services that should be the focus of best practice development. This research suggests that there are four key areas in this respect: entrepreneur training (often part of 'pre-incubation'), business advice, financial support (in some cases from incubator seed/venture capital funds but usually through links with external providers), and technology support.

3.2.3. Business incubators should charge clients for the support services they provide but the level at which prices are pitched should be designed to minimise the risk of 'crowding out' private sector providers. The research suggests that relatively few incubators (around 4%) provide business support services on an entirely free basis to clients. However, pricing levels tend to reflect an element of subsidy (35% of incubators stated that pricing was below market levels).

3.2.4. With regard to incubator operating procedures, it is essential that there is a clearly defined target market and that this is reflected in the admission criteria. Experience suggests that the more successful incubators are the ones that have a particular technology and business focus. A focus of this type enables incubator managers to develop specialised knowledge and skills, and facilitates the clustering of client companies (e.g. enabling business relationships to develop between incubator tenants). The report provides an analysis of the types of admission criteria adopted.

3.2.5. Whilst achieving high occupancy rates is important to generate income, this consideration needs to be balanced against the importance of maintaining selective admission criteria. As noted earlier, achieving high occupancy levels quickly is desirable from the point of view of income generation but can have disadvantages in terms of being able to react flexibly to the changing requirements of tenants. Similarly, there is a danger

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that the selective approach to admitting projects will be abandoned in favour of a 'first-come-first-served' approach.

3.2.6. Likewise, adopting exit criteria that ensure a turnover of client companies is desirable even if the turnover of firms makes revenue levels from rental income and other services less certain. Similar considerations apply to the question of exit rules. The research suggests that most incubators do, in fact, limit the length of time companies can remain as tenants (typically to around 3 to 5 years). Moreover, in many cases, companies move on to new locations because they need more space to grow. Graduated rentals rising to above market rates after a given period of time is another method that a number of incubators (24% of the sample) adopt to encourage firms to move on. At the same time, highly specialised incubators – e.g. biotechnology incubators – may have longer tenancy periods for their clients reflecting the nature of business activities.

3.2.7. After-care and networking with firms that have left an incubator should be regarded as just as important as providing services to incubator tenants. The destination of incubator 'graduates' should be monitored with companies being encouraged to remain in the local area. Graduate retention is important in ensuring that incubator operations have long-term benefits to the areas where they are located. Moreover, experience suggests that many firms are at the most vulnerable stage in their development when they leave an incubator. The provision of after-care services to 'graduates' is therefore critical to ensuring sustainable incubator impacts.

3.2.8. The quality of the management team, and adoption of a business-like approach to running incubators and monitoring clients, is crucial to performance and best practices in this field are becoming standardised. European incubators typically have around 5 to 6 staff (half of whom are managers) with senior personnel coming from a business background. A key efficiency indicator is the ratio between staff and companies. Based on this research, the ratio would appear to be 1: 3.2 (tenants) or 1:5.0 (tenants plus other clients). New economy incubators have an even higher ratio than this.

3.2.9. The type of activities client companies are pursuing, in particular the technology/knowledge intensity of these activities, is the key factor (rather than physical features or operating modality) that should be used to differentiate one type of incubator from another. In the past, incubator models have tended to be classified according to the nature of inputs (public, private, etc) and processes (type of incubator space, range of services, etc). An arguably better method of classification is to differentiate between the specialisms of incubators as reflected in the activities of their tenant companies. An approach of this sort makes sense given the fact that different types of incubators are increasingly offering very similar 'core' services.

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3.3 Evaluating Business Incubator Services and Impacts

3.3.1. The performance of business incubators should be judged primarily in terms of the results achieved, i.e. the impact they have on businesses, wider economic development and other priorities. A key message from this project is the need to judge incubator performance in terms of the long-term impacts achieved rather than short-term measures such as occupancy rates or failure rates. The report contains an assessment of incubator impacts suggesting that in terms of employment effects (a key indicator for public authorities and a proxy measure for a range of other impacts), European incubators are generating around 30,000 gross new jobs per annum. If indirect effects are taken into account – the higher spending in local economies brought about by additional direct employment and new jobs created in local supply chains – then this figure increases to around 40,000 net jobs per annum. Moreover, these results are being achieved at an average gross cost per job to public authorities of around €4,500 (€,4000 net).

3.3.2. In assessing the impact of incubators, there is a need to obtain feedback directly from client companies and greater priority should be given to this than has hitherto been the case. An important lesson to be learnt from this project is that incubator impacts can only be properly assessed by obtaining information from companies. Previous research has tended to rely on survey data from incubator managers alone. Whilst this provides good insights to the 'input' and 'process' aspects of their operations, it does not provide the basis for an in-depth understanding of 'outputs' and impacts. Feedback from companies is also important from a more practical point of view, i.e. client management and networking with 'graduates'.

3.3.3. Likewise, a distinction should be made between gross and net impacts achieved by business incubators. As Point 3.4.1 makes clear, business incubator impacts are likely to be considerably under-estimated if only direct (gross) effects are taken into account. However, there are other essentially practical reasons for undertaking a more probing assessment of incubator impacts: investigating the extent of displacement is important in helping to ensure that an incubator's target market is appropriately defined - if support is being given to projects that compete directly with existing local businesses, then the net value added of the incubator's operations is questionable. Likewise, an understanding of additionality involves obtaining client feedback on the role played by an incubator in the development of their business and this information should help to ensure that the right services are being provided.

3.3.4. Although 'new economy' incubators are currently out of favour, there are many lessons to be learnt that are relevant to the more 'traditional' model (and visa-versa). This research suggests that there are three main lessons to be learnt from the experience of 'new economy' incubators: firstly, although market conditions are currently unfavourable, 'new economy' incubators have demonstrated a potentially profitability

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model that is attractive to the private sector; secondly, 'new economy' incubators have shown that the incubation process can operate successfully on a virtual basis; and, linked to this, they have demonstrated that the real value added of the business incubation approach lies in the sharing of know-how rather than physical aspects. By the same token, the 'traditional' model has enduring strengths and these are examined in the report.

3.3.5. Across Europe, there are a variety of different business incubator models and precise modalities should reflect local, regional and national circumstances and priorities. As Section 2 of this report highlighted, there are a large number of different incubator definitions and models across Europe. Although they share basic features in common, there are also significant differences relating to stakeholder objectives, target markets, and the precise configuration of incubator facilities and services. These differences are partly a reflection of location-specific factors of a cultural, institutional, and policy nature, and it is important that these local factors are taken into account in defining best practice.

3.3.6. Similarly, although only limited comparisons are possible, the research confirms significant differences between the way in which European and US incubators operate and therefore scope for a sharing of experience and know-how. Section 6 of this report highlighted differences between the way in which business incubators operate in Europe and the USA. Although the evidence is far from conclusive one way or another, this analysis suggests that whilst US incubators, for example, demonstrate particular strengths with regard to company financing and some management functions, their European counterparts have probably developed more expertise in fields such as entrepreneur training, virtual networking, and integrating incubator functions into broader strategies.

3.3.7. Overall, this report suggests that business incubators are a very cost-effective instrument for the promotion of public policy objectives. The relatively low cost per job and other less easily quantifiable benefits demonstrated by business incubators covered by this research suggest that they are a very effective method of promoting knowledge intensive, new technology-based activities. Direct comparisons with other types of schemes are difficult to make, one reason being that incubators usually combine many features of other schemes (e.g. the provision of advisory services) and/or are closely linked to them.

A summary of 'headline' and 'operational' indicators that have been used in this project, together with benchmark values, is provided at the end of the report.

3.4 Best Practice and Policy Recommendations

In this section we outline key recommendations, starting with promoting best practice at an operational level. We then consider wider policy initiatives that might be taken at a European level to promote best practice in business incubation.

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Promoting Best Practice in Business Incubation at an Operational Level

3.4.1 Business incubators should be encouraged to benchmark themselves against best practice standards and to take the steps required to achieve them. The report contains a range of benchmarks relating to setting up and operating business incubators. In some cases, these can be quantified and a summary of the key benchmarks is provided at the end of this summary. In the report itself, we have also provided best practice examples covering aspects of business incubator operations where quantified benchmarks are not appropriate. Also, it is important to stress that the benchmarks will not apply to every type of incubator.

We recommend that in seeking to achieve best practice at an operational level, particular attention should be given to:

- Ensuring that incubator operations are integrated into wider *regional (technology) development strategies* and supported by broadly based partnerships;
- Clearly defining the *target market* and adopting *admission criteria* that focus on projects where an incubator can genuinely add value;
- Placing particular emphasis on developing *high quality business support services* (entrepreneur training, business advice, technology support, financing, etc);
- Ensuring that incubators are managed in a business-like manner with the aim of maximising *value for money*;
- Developing *'virtual' incubation services* so that more businesses can benefit and through after-care/graduate networking, ensuring that job and wealth creation effects are retained in local economies.

These points and others are elaborated on below.

3.4.2. Benchmarking and best practice sharing should focus on the four key incubator service areas identified in this report – entrepreneur training, business support, financing, and technology support. As argued earlier, practices are now more or less standardised with regard to the provision of incubator space and the challenge facing incubators is more to focus on developing first-class business support services, including a virtual dimension for firms not located in incubators. This report has identified four key incubator service areas and, in each case, we have highlighted a number of examples of best practice. Two areas – entrepreneur training and financing -might be prioritised since these appear to be where there is the least know-how.

3.4.3. Business incubators should be encouraged to periodically undertake impacts assessments. There are a number of reasons why incubators should undertake impact assessments, not least of all to demonstrate the benefits of public support. However, there

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are considerable methodological and practical data collection complications. We recommend that incubators themselves, and the national associations (if possible, supported by the Commission) should (a) identify best practice in this field; (b) a develop a common methodology based on best practice; and (c) agree on one or more pilot exercises to determine the best way of proceeding.

3.4.4. A further priority should be for business incubators reduce their dependence on public subsidies. In this report we have argued that public subsidies for business incubators have an important role and that in many cases such support is accepted as a cost-effective way of helping to achieve policy objectives. However, even where this is so, there is a strong argument for encouraging individual incubators to reduce their dependence on public funding so that available resources can be spread more widely and used to promote new initiatives. The report has identified a number of ways in which incubators can improve income generation and hence their overall financial sustainability.

3.4.5. There is a need to 'professionalise' the occupation of business incubator management. As the report has made clear, the quality of the management team is a key to successful incubator activities. At present there is no recognised professional qualification or standard in this field although specific incubator management functions (e.g. personnel management, providing financial advice to companies) are of course areas where such standards exist. Consideration might be given, however, to developing EU-level professional standard relating to overall incubator management.

EU Level Actions to Promote Best Practice in Business Incubation

3.4.6. As a starting point to any EU-level initiative, priority should be given to developing a set of common definitions and quality standards for European business incubators. A starting point for any initiative to set up a European business incubator association should, we recommend, be to agree on an EU-level definition of a business incubator and, based on this, to devise EU-level quality standards. This report provides a starting point in defining key best practice benchmarks. There is also a lot of work that has been undertaken by national associations. It will clearly be important to take this material into account. One way of encouraging incubators across Europe to develop best practice would be to establish a financial instrument that invests via incubators that demonstrate effective operations in their client firms. This could be linked to existing venture capital funds or possibly opened up to wider markets.

3.4.7. We recommend that the survey of European business incubators undertaken as part of this project should be repeated periodically, preferably on an annual basis. Rather than relying on a 'snap-shot' as in this project, a longitudinal approach would make it possible to benchmark dynamically and to identify trends in incubator management and performance. The starting point might be to encourage national business incubator associations to adopt a common methodology based on a proforma that

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contains a number of common questions. Any initiative of this sort should also be linked to the further development of the Commission's database of European incubators.

3.4.8. Consideration should be given to establishing a European Business Incubator Association as an overall framework for taking actions forwards. At present, there are a number of national associations in Europe which have occasional ad hoc contacts with one another but an absence of an over-arching structure at an EU level. Such a structure is almost certainly needed to secure the engagement of Europe's incubator community as a whole in any initiatives to take this project forwards. An organisation that already has a pan-European role is the European Business Network (EBN) representing BICs and consideration might be given to developing a wider business incubator association based on EBN. Which ever approach is adopted it will be important to involve national associations closely in the discussions.

3.4.9. The European Commission should review the role of different Directorate-Generals and schemes to ensure that a coordinated approach is being adopted to the promotion of business incubators. A number of different Commission DGs have an interest – either explicit or implicit – in the operation of business incubators (apart from DG Enterprise, this includes DGs Employment, ECFIN, Research, and Regional Policy). To ensure that the various types of support the Commission can provide to incubators is coordinated, and that incubators themselves promote broader EU policy objectives, we recommend that there should be discussions between DGs to develop a Commission-wide strategy and action plan for the promotion business incubators in Europe.

3.4.10. In addition to the purely EU dimension, steps should be taken to improve the sharing of best practice between European and North American business incubators. This report has not been able to make detailed comparisons between business incubator operations in Europe and the USA but it is nevertheless clear that there is much to be potentially learnt from sharing experience and know-how. Through this project, good contacts have been established with the NBIA and it is a question of now further developing the relationship.

3.5. Summary of Key Benchmarks

Appendix B provides a summary of key averages, ranges and benchmarks that can be quantified. The values are based on an analysis of the CSES survey data and discussions with incubator managers on best practice standards. It should be stressed that given the diversity of incubator operations and objectives, the benchmarks will not apply universally. Similarly, it is not possible to quantify benchmarks for many aspects of incubator operations.

COMPARISONS WITH UNITED STATES 4

4.1 Key indicators in Europe and the United States

Over the last decade, universities, consultants and regional development agencies have undertaken a variety of studies on best practices at US incubators. NBIA is currently preparing a benchmarking study on technology incubators, based on a grant from the U.S. Department of Commerce Technology Administration's Office of Technology Policy. The objectives are to assess their performance as well as to identify effective practices, outcomes and operational environments. A self-evaluation tool is also being developed to assist the boards and managers of established incubators assess their internal procedures and address weaknesses in their operations.

As the EU study concludes, there is much to be potentially learnt from sharing experiences between the U.S and European incubation industry. Further, much can be gained through direct contacts between the incubators themselves. The analysis in this section is based on CSES's survey results for EU Member States and NBIA data for the USA. As NBIA's current survey was not completed by the time this report was prepared, we were only able to obtain data on a limited number of performance indicators.

Comparisons Between Europe and the USA

Key Performance Indicators	European survey data	US survey data
For profit/ Not for profit	21.8 (FP)/ 76.9 (NFP)	11.5 (FP)/ 86.5(NFP)
Occupancy rate	85% (av.)	81% (av.)
Survival Rate	84.2%	87%
Equity Position [1]	Yes - 7.7%	Yes – 34.6%
Av. no. of tenants per incubator	24.7 (av), 18 (median)	14.5 (av), 11 (med.)
Av. no. of FTE jobs / tenant company	6.2	7.7
Av. new jobs created/ tenant/year [2]	1.5	2
Amount of incubator space	5,860 (av), 3,000 (med.)	NA
Graduation Policy? [3]	Yes – 79.5%	Yes - 90.4%
Breakeven [4]	Yes – 40.8%	NA
No. of incubator staff	5.6	NA

Source: CSES analysis of sample, US data taken from NBIA's State of the Incubation Industry

[2] The number of new jobs created per firm is based on direct employment creation effects, which takes into account failure rates and the presence of pre-existing firms. New employment creation is calculated over a one year period and assumes that the average length of tenancy in a typical incubator is 3 years and that 12% of incubator tenants were pre-existing firms. The survival rate was 84.2%

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4.2 To subsidy or Not to be

The proportion of for-profit incubators appears to be higher in Europe than the US, based on the samples available. The success rate for start-ups in US incubators is higher, and US incubators invest directly in their client companies on a more frequent scale. Interestingly, the number of tenants per incubator tends to be twice as high in Europe (average 32) than in the US (15).

If the incubator stopped receiving cash subsidies, what would be the effect on operations?

Financial Sustainability	**Europe**		**USA**	
	No.	%	No.	%
(1) Activities could be maintained at current levels	6	7.7	9	17.3
(2) Activities would have to be reduced significantly	31	39.7	12	23.1
(3) Incubator activities would stop altogether	17	21.8	7	13.5
(4) Not relevant - incubator does not receive subsidies	9	11.5	18	34.6
(5) No Response/ Blank	15	19.2	6	11.5
Total	78	100.0	52	100.0

SCOPE FOR BENCHMARKING IN OTHER COUNTRIES 5

5.1 Benchmarking and Evaluation Experiences Elsewhere

There is an emerging consensus on the metrics of internal audit, evaluation, assessment and benchmarking of incubator performance, and a growing recognition that such exercises are essential.

5.1.1 Challenges Facing Incubators

This is specially so in the industrializing and restructuring countries where incubation has started more recently and where incubators operate in the more difficult environments of:

- *Governance structures* that are not autonomous nor pro-active,
- *Management* that often lacks specific business experience and training,
- *Inadequate preparation* to assess the market needs, the financial viability, the location and size of building, and to mobilize community support,
- *Poor operating procedures* with haphazard selection and exit processes for client-companies,
- *Weak linkages to the knowledge base* and external support networks,
- *Inadequate services* for clients and cheap work-space as the main attraction,
- *Limited financial resources*, for the incubator development and for the clients
- *Inadequate monitoring and evaluation systems*, continuing dependence on external subsidy

Raising the majority of such incubators to a higher performance level would help enhance the image of the whole incubation industry and move it towards the key EU performance goals of relevance, efficiency, effectiveness, utility and sustainability. From the perspective of the local sponsors and international donors, *sustainability* implies the capability to perform effectively even after the external support has declined or ceased. For the clients, it is the satisfaction that the benefits received in building skills, accessing finance and growing are well in access of the costs.

An initial UN-sponsored assessment of incubation in seven industrializing countries (Brazil. China, Czech Republic, Mexico, Nigeria, Poland, Turkey)[5] has pointed to the benefits and pitfalls of incubation, and the imperatives of providing the software of value-adding counseling, training, information and networking services, as well as the

[5] R. Lalkaka and J. Bishop, Business Incubators in Economic Development, UNDP-UNIDO-OAS, 1996

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affordable work-space and shared office facilities. Many programs in developing countries have been growing rapidly but without the commensurate efforts to enhance their effectiveness and impacts.

Benchmarking could have a key role in this respect. Below we review developments in a number of key regions and then consider the scope for applying benchmarking methods.

5.1.2 Brazil

A rapid assessment was made of the performances of two technology incubators in Brazil - Biominas Biotechnology Incubator, Belo Horizonte, MG, and the ParqTec Technology Incubator in Sao Carlos, SP, Brazil[6]. This was based on extensive questionnaires filled out by incubator managements, analyses of records at the two locations as well as interviews with sponsors and tenants of their opinions on satisfaction with services.

The assessment indicated that both incubators studied have had positive impacts and outcomes on their respective city and state economies in nurturing entrepreneurs and creating sound enterprises with good survival rates. ParqTec has generated employment with public subsidy of around US$ 3,258 per job, *without* including jobs in affiliates. The estimated return in the form of taxes could be about $ 6 per dollar of public subsidy. Both incubators are helping their government sponsors in promoting technological development and other social aspects such as reinforcing the cultures of entrepreneurship and university-research-business cooperation. They now plan major technology parks linked to their incubators.

That being said, Biominas and ParqTec (and many of the other 160 incubators in Brazil) have the major challenges ahead of enhancing their operational effectiveness through innovative activities and creative financing, in order to reduce the present dependence on state subsidies.

5.1.3 China

There are about 200 incubator-variants and the number is growing. China also pioneered the concept of International Business Incubation, starting in 1996. A recent assessment undertaken by BTDS.[7] relied on documentary sources, supplemented by long-distance interviews with samples of sponsors and tenants at Tianjin, Tsinghua and Hefei. These showed overall satisfaction at the performance[8]. The data on 77 incubators tracked by the Torch Program (1998) indicated that these had average floor space of 11,475 sq m, 54

[6] R. Lalkaka and Shafer, Technology Business Incubators in Brazil—Assessing Performance, UNDP, 1999
[7] Study for UNIDO, Vienna, 2000
[8] Survey supervised by Ma Feng-Ling and Dinyar Lalkaka, March 2000.

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tenants and 896 employees. Each had 17 graduate companies that employed 612 persons (at graduation).

Strong government leadership in an era when market forces were still in the early stages of development has been the main determinant of China's large incubation system. This expansion is facilitated by major subsidies -- typically up-front in land and buildings, low-cost loans by local state agencies, and some on-going operating subsidies. There is a continuing demand on low-cost space, together with benefits from the state by being resident in an incubator. Further, 'anchor tenants' (including banks, super-markets, restaurants) help raise revenues.

Chinese incubators have also been a means of creating cultural change. They have helped bridge the gap between government research and the marketplace, fostering entrepreneurial attitudes, and facilitating the re-entry of Chinese scholars abroad. The incubator associations have been effective in promoting continuous interaction and learning opportunities among the managers. There has been a willingness to learn from The weaknesses of the program, well recognized by the Chinese authorities, include the focus on the "hardware" aspects. The managements are generally composed of civil servants who have little business experience The services provided are typically not on a cost-recovery basis, which limits their quality and sustainability. mistakes and from the experience of other countries.

In terms of rapid expansion, the program has been outstanding. Qualitatively, incubators in China — as elsewhere — have much to do to rigorously assess their programs and enhance their performance.

5.1.4 Poland

UNDP technical assistance in 1990 helped pioneer the concept in Poland, starting with the first incubator in Poznan. The creation in 1992 of the Association of Polish Business Incubators and Innovation Centers became the catalyst for growth. Currently there are about 63 incubators. They have helped start over 1,500 firms and create more than 6.000 job. Average space of the incubator is about 2,500 sqm (space to rent – 1,790 sq.m) with 18 tenants each. Investment has been under US$ half-million per incubator. In the difficult environment for transforming the economic system, Poland has effectively adapted the concept of incubation.

Starting in June 1994, a pioneering benchmarking program had been initiated on eleven incubators supported under a World Bank program at the Ministry of Labor[9]. This attempted on a monthly basis to compile, analyze and disseminate information on such

[9] Communication from K. Zasiadly, 2001

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indicators as: the income and expenses per sq.m. of workspace, supplementary funding from the Ministry and other sources, for facilities and operations, numbers of clients entering and discontinuing, occupancy rates, jobs created at firms and graduates, and corresponding net subsidy, etc. The incubation industry was still being developed, and the exercise was before its time.

A recent assessment of the environment and operations of three technology incubators in the ***Ukraine*** indicated that, despite the enormous local technical capabilities and significant external assistance, the incubation process itself was still far from delivering the results expected.

5.2 Applying the Benchmarking Methodology to Other Regions

While one environment can differ markedly from another, the EU experience on benchmarking to improve performance has lessons for other countries and regions. These include the following:

The European program involved 15 different countries, and considerable effort was deployed in arriving at a consensus among the managers from each country on the framework conditions, distinguishing incubation characteristics as well as the common indicators to be assessed. It would be easier to make a start on a benchmarking program on a family of incubators with comparable approaches within a single country

The willingness of incubator managers has to be mobilized, with assurance of confidentiality in the information they provide. It is not possible to make valid comparisons of performance on a continuing basis without shared understanding and commitment of all concerned.

It certainly would help to have a committed source for funding such an exercise, as was the case for the EU programme. The sponsors need to encourage (and make financial provision for) the collection of all pertinent data, and be realistic in terms of the time and expectations of such a benchmarking program.

A central agency (such as an incubator association) could play the coordination and catalytic role, using independent experts as needed, to demonstrate the impartiality and objectivity of the exercise, and not be perceived as an advocacy group.

While the pursuit of good-better-best practices is the Holy Grail, it has to be clearly recognized that the such practices are location-, time- and culture-specific. At best the success factors in establishing, operating and evaluating incubators can be adapted to the local conditions, as they ‘reconnoiter globally, reengineer-locally’

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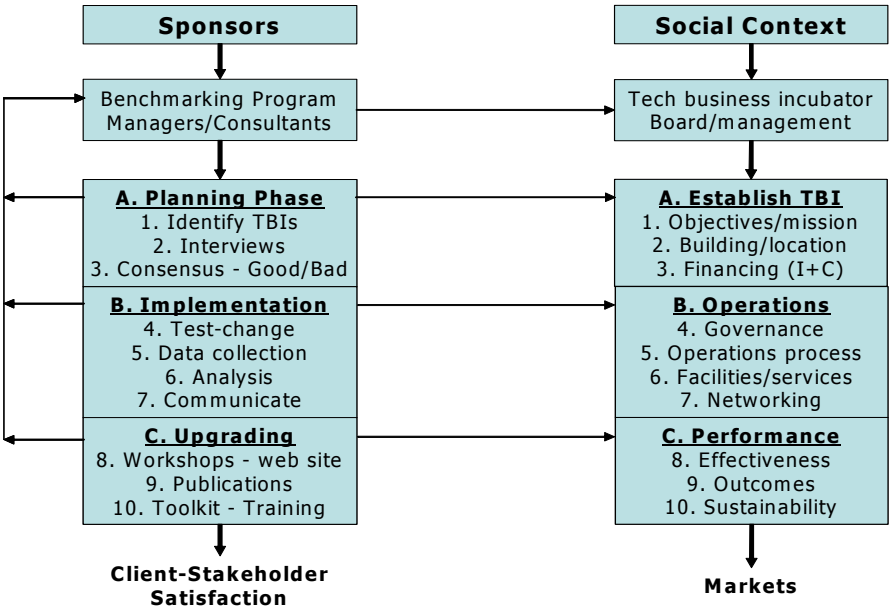
The diagnostic and planning phases involves reaching understandings on the specifics of context, benchmarks, objectives, problems, practices, timing and the management of change.

The real, longer-term benefits can only come when the processes are established for securing the data required to assess each coefficient, honestly, accurately and promptly; to disseminate the distilled data confidentially on an agreed schedule; and then, importantly, to help the incubator management raise its level of performance to higher levels, attribute by attribute.

The EU methodology could be adapted in selected countries, as shown below.

Benchmarking Programme to Improve Performance



Countries where benchmarking could have significant benefits due to the large scale of operations and the necessity of reducing public subsidy are: *China, Brazil, Korea, Taiwan and Japan.* Then, the benchmarking program could be extended to a sub-regional grouping of countries, for instance: *East Asia, South/Central America.*

CONCLUSIONS 6

Towards a World Association of Business Incubators

Business incubation has certainly achieved the status of an 'industry', with over 3,000 facilities of various configurations, roughly one-third each in north America, in western Europe, and in the rest of the world. NBIA has been largely instrumental in transferring the essential concepts and good practices through its publications, training programs and advocacy activities, as well as providing opportunities for national associations to exchange ideas at its annual conferences.

Other national and regional agglomerations have served local needs, specially the associations in Canada, Western and Central Europe, Egypt, Uzbekistan, Brazil, Colombia, Mexico, China, Korea, Taiwan, Indonesia, Japan, and now the Asian Association of Business Incubators. In the globalizing economy, the time may well have come for a *structured international incubation platform.* The Internet provides the means for facilitating interactions at high speed and low cost.

A good start could be made towards a ***World Association of Business Incubators*** by setting up a Task Force to review a variety of options and approaches. For instance:

- What services can be provided that usefully transcend geography and culture?
- Should these relate essentially to HRD through training, seminars and publications?
- What are the conditions that characterize an 'incubator'?
- Should the incubators themselves be 'certified' as meeting the requirements of membership?
- Should managers be 'accredited' to meet the requisite professional skills?
- How can synergy between incubators and research institutes/technology parks be realized?
- In structure, is this to be an apex "association of associations", with equity?
- How can clients be enabled to exchange experience, technology, products, services?
- Building upon what exists, can the EU website and benchmarking methodology be extended to cover other regions?
- Importantly, how can a global system be sustainable, with minimum staffing and funding?

Ten questions, no simple answers. But a start can be made, NOW.

SUMMARY BENCHMARKS B

Performance Drivers - Key Headline and Operational Indicators

	Setting Up and Operating Incubators
1.	**Number and type of stakeholders** – the role of stakeholders, in particular the backing of a broad public-private partnership, is critical to successful incubator operations and the wider role of incubators in contributing to regional strategies on competitiveness and technology transfer.
2.	**Number and type of incubator units** – this together with the location and type of incubator premises largely determines start-up costs and the capacity of an incubator to operate on a cost-effective basis and achieve economies of scale. There are a number of operational indicators (see below).
3.	**Number and type of client companies** – the number and type of tenants provides a basis for classifying incubators (e.g. a technology centre will typically have more than 75% of its clients engaged in knowledge-intensive activities) whilst information on the performance of tenants provides the basis for assessing incubator effectiveness.
4.	**Start up and operating costs/source of funding –** there are a large number of possible headline and operational indicators relating to incubator finance (e.g. extent to which breakeven is achieved) and, likewise, if linked to incubator outcomes, this enables efficiency and value for money issues to be assessed.
	Key Incubator Functions, Management and Promotion
5.	**Incubator occupancy rates and turnover** – occupancy rates provide an indication of how successfully incubators attract clients and is also for many incubators a key to financial viability. The turnover of tenants is a guide to operating efficiently.
6.	**Range and pricing of business support services** – the provision of a comprehensive range of business support services is a defining characteristics of the incubator model. These can be grouped into four categories – entrepreneurship training, business advice, technology and innovation support, and financing of companies. In each case, there are a large number of possible operational indicators.
7.	**Admission and exist criteria** – again, the existence of formal admission and exit criteria are a defining characteristic of the incubator model and important in ensuring a turnover of tenant companies. Operational indicators include the length of time tenants remain in the incubator.
8.	**Number and type of incubator personnel** – the ratio of incubator personnel to clients is another key indicator of efficiency. More fundamentally, the quality of the management team is clearly a major determinant of incubator performance.
9.	**Criteria used to monitor performance** – in addition to a formal set of indicators and quality standards, a key factor here is the extent to which incubators obtain feedback from their clients on the services being provided to them.

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	Evaluation of Incubator Services and Impacts
10.	**Performance of tenants, job and wealth creation** – the failure/success rate of incubator tenants is widely used as a short-term measure of their performance whilst job and wealth creation indicators provide an insight to longer term impacts.
11	**Number of graduates/retention in local area –** monitoring the destination of graduates is a key to understanding the extent to which incubators achieve sustainable impacts that benefit the areas where they are located.
12.	**Value added of incubator operations –** benchmarking the performance of incubators needs to be based on an assessment of the value added they demonstrate, i.e. the extent to which the performance of client companies can be attributed to the support obtained from an incubator.

Summary of Key Incubator Performance Statistics and Suggested Benchmarks

Setting Up and Operating	**Average**	**Range**	**Benchmark**
Average capital investment cost	€3.7 million	€1.5 to €22 m	NA
Average operating costs	€480,000 p.a.	€50,000 to €1.8 m	NA
% of revenue from public subsidies	37%	0% to 100%	25%
Incubator space	3,000 m²	90m² - 41,000m²	2,000 – 4,000 m²
Number of incubator tenants	27 firms	1-120 firms	20 – 30 *
Incubator Functions	**Average**	**Range**	**Benchmark**
Incubator occupancy rates	85%	9% –100%	85%
Length of tenancy	35 months	6 months - no max	3 years
Number of management staff	2.3 managers	1 – 9 managers	2 managers min
Ratio of incubator staff: tenants	1: 14	1:2 – 1:64	1:10- 1:20
% of managers' time advising clients	39%	5% – 80%	50%
Evaluating Services and Impacts	**Average**	**Range**	**Benchmark**
Survival rates of tenant firms	85%	65% – 100%	85%
Average growth in client turnover	20% p.a. (2001)	5% to 100% p.a.	25%
Average jobs per tenant company	6.2 jobs per firm	1 to 120	NA
New graduate jobs per incubator p.a.	41 jobs	7 to 197	NA
Cost per job (gross)	€4,400	€124 to €29,600	€4,000 to €8,000

* *see note on setting up and operating incubators*

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Notes**:**

Capital investment and operating costs: It is inappropriate to set benchmarks for incubator capital investment and operating costs because these will vary widely depending on the type of incubator. For example, a biotechnology incubator requires dedicated laboratory space as well as office space, whereas an incubator providing just office to new start-ups will require less capital investment.

Proportion of revenue dependent on public subsidies: Whilst the public funding requirements of incubators will inevitably vary depending on location-specific factors such as the dynamism of the regional economy and the extent of market failure, we have assumed that incubators should try and increase the proportion of operating costs derived from their own activities (rent, advisory services, etc).

Incubator space/number of tenants: The average incubator space in the survey was 3,000m². There is a good deal of evidence to suggest that a minimum of 2,000 m² space is needed (enough to accommodate 20-30 companies) to achieve economies of scale. We suggest a range of between 2,000 m² to 4,000 m² as a benchmark depending on the type of incubator.

Length of tenancy: A benchmark of 3 years is suggested. It should be noted that the benchmark applies to the average incubator and would not be appropriate for some specialist types of incubators, e.g. biotech incubators, high-tech R&D and high-tech manufacturing because of the longer product development lead times associated with those business sectors, amongst others.

Number of Managerial Staff, Ratio of Staff/Tenants: The benchmark of at least two managers assumes an average of 20-30 tenants and allows sufficient flexibility to cover absence (training and professional development, conferences, holidays, sickness etc.) while still ensuring that tenant firms have permanent access to managerial-level advisory support at all times. Given that the real added value of incubation lies not in real estate aspects but in the quality, relevance and utility of business advisory, the ratio of incubator managers to incubator tenants should ideally not exceed 1:20.

Proportion of Management Time Advising Clients*:* Currently, the proportion of management time spent advising clients, highlighted in the survey, stands at 39%. We have assumed that, ideally, it should be possible to 'free-up' management so that more time is spent advising tenants and less on administrative matters.

Survival rate of tenant firms: The survey revealed that the survival rate of firms reared in an incubator environment was significantly higher than the business success rate amongst the wider SME community, estimated at 30-50% (over a 5 year period). In the survey, there was a notable clustering of incubators reporting a survival rate amongst tenant firms of 80-90% and the benchmark is based on this. The survival rate of incubator tenant firms operating in more high-risk sectors such as high-tech industry may well be lower. We would emphasise that survival rates are one indicator of the performance of incubators, of more importance is the extent to which incubators can contribute to the accelerated development of innovative, high-growth firms and their capacity to create new jobs.

Job creation – average jobs per tenant company / new jobs per incubator: Whilst employment creation is one of the key objectives of business incubators, setting a benchmark for the number of jobs created per firm or per incubator would be inappropriate because the number of jobs

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created will vary greatly depending on the type of companies being incubated, the amount of tenants the incubator can accommodate and the amount of available space. The number of jobs generated by a typical tenant company will vary immensely depending on the type of industry the firm specialises in, the extent to which industry is technology-intensive as opposed to labour intensive. Similarly, the total number of graduate jobs created per incubator will vary because the total aggregate number of firms varies widely between incubators specialising in different types of industries.

Cost per Job*:* The average gross cost per job according to the incubator survey was €4,400. When set-up costs and the amortisation of capital are taken into account, the figure rises to €6,700. Rather than setting a benchmark, we have set a range, which we feel is more appropriate given that incubators receive widely differing levels of support from the public sector/ EU depending on location-specific factors.